CLAIMS

What is claimed is:

5        1. A method for caching attribute data for matching attributes with physical addresses,

comprising:

        storing a plurality of attribute entries in a memory, the memory configured to provide

at least one attribute entry when accessed with a physical address, wherein the attribute entry

provided describes characteristics of the physical address.

10

        2. The method of claim 1, wherein the memory is configured to provide the attribute

entry to attribute logic controlling the  manner in which the physical address, or data at the

physical address, is handled.

15        3. The method of claim 2 wherein the memory is implemented as a parallel attribute

cache.

        4. The method of claim 2 wherein the memory is implemented as a serial attribute

cache.

20

        5. The method of claim 2 wherein the memory is implemented as a basic attribute

cache.

        6. The method of claim 1, further comprising:

25        performing an attribute lookup to obtain the attribute entry when the attribute is not

stored in the memory; and

        storing the attribute entry into the memory.

7. The method of claim 1, further comprising:

speculatively performing a plurality of attribute lookups to obtain a corresponding plurality of attribute entries; and

5        storing the plurality of attribute entries into the memory to service a subsequent access.

8. A system for caching attribute data for use with a translation look aside buffer, comprising:

10        a TLB for storing a plurality of TLB (translation look aside buffer) entries for the virtual address to physical address translations, wherein the entries include respective attributes; and

an attribute cache coupled to the TLB, the attribute cache for storing a plurality of attribute entries and for providing a selected attribute entry when the attribute entry is not

15    stored in the TLB.

9. The system of claim 8, further comprising:

a page table for performing an attribute lookup to obtain the attribute entry when the attribute entry is not stored in the attribute cache.

20

10. The system of claim 9, wherein the attribute cache is configured to support speculative attribute lookups to obtain a corresponding plurality of attribute entries, wherein the plurality of attribute entries are stored into the attribute cache to service a subsequent access when a subsequent attribute is not stored in the TLB.

25

11. The system of claim 8 wherein the attribute entries of the attribute cache are indexed with physical addresses.

12. The system of claim 8 wherein at least one attribute entry indicates that the physical page is write-protected.

5      13. The system of claim 8 wherein at least one attribute entry indicates that the data associated with the physical address is cacheable.

14. The system of claim 8 wherein at least one attribute entry indicates that the data associated with the physical address is cached in an alternate caching system.

10

15. A TLB (translation look aside buffer) having an attribute cache for caching attribute data for use with a translation look aside buffer, the TLB storing a plurality of TLB entries for the virtual address to physical address translations, wherein the entries include respective attributes, wherein the attribute cache stores a plurality of attribute entries and

15     provides a selected attribute entry when the attribute entry is not stored in the TLB.

16. The TLB of claim 15, wherein the TLB is configured to access a page table for performing an attribute lookup to obtain the attribute entry when the attribute entry is not stored in the attribute cache.

20

17. The TLB of claim 15, wherein the attribute cache is configured to support speculative attribute lookups to obtain a corresponding plurality of attribute entries, wherein the plurality of attribute entries are stored into the attribute cache to service a subsequent access when a subsequent attribute is not stored in the TLB.

25

18. The TLB of claim 15 wherein the attribute entries of the attribute cache are indexed with physical addresses.

19. The TLB of claim 15 wherein at least one attribute entry indicates that the physical page is write-protected.

5      20. The TLB of claim 15 wherein at least one attribute entry indicates that the data associated with the physical address is cacheable.

21. The TLB of claim 15 wherein at least one attribute entry indicates the data associated with the physical address is cached in an alternate caching system.

10

22. A computer readable media for caching attribute data for use with a translation look aside buffer, the media storing computer readable code which when executed by a processor causes the processor to implement a method comprising:

storing a plurality of TLB (translation look aside buffer) entries for the virtual address

15   to physical address translations, wherein the entries include respective attributes; and

storing a plurality of attribute entries in an attribute cache, the attribute cache configured to provide at least one attribute entry when the attribute entry is not stored in the TLB.

20      23. The computer readable media of claim 22, wherein the attribute cache is configured as an attribute cache configured to provide the attribute entry when the entry is not stored in the TLB.

24. The computer readable media of claim 22, further comprising:

25      performing an attribute lookup to obtain the attribute entry when the attribute is not stored in the attribute cache;

storing the attribute entry into the TLB; and

storing the attribute entry into the attribute cache.